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CURRENT SERIAL RECORDS

WATER SUPPLY OUTLOOK
and
FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS
for
ARIZONA

UNITED STATES DEPARTMENT of AGRICULTURE--SOIL CONSERVATION SERVICE,
SALT RIVER VALLEY WATER USERS ASSOCIATION
and
ARIZONA AGRICULTURAL EXPERIMENT STATION

Data included in this report were obtained by the agencies named above in cooperation with the Federal, State and private organizations listed on the last page of this report.

AS OF
MAR. 1, 1962

UNITED STATES DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE

To Recipients of Cooperative Snow Survey and Water Supply Forecast Reports:

The climate of the cultivated and populated areas of the West is characterized by relatively dry summer months. Such precipitation as occurs falls mostly in the winter and early spring months when it is of little immediate benefit to growing crops. Fortunately, most of this precipitation falls as mountain snow which stays on the ground for months, melting later to sustain streamflow during the period of greatest demand during late spring and summer. Thus, nature provides in mountain snow an imposing water storage facility.

The amount of water stored in mountain snow varies from place to place as well as from year to year and accordingly, so does the runoff of the streams. The best seasonal management of variable western water supplies results from fore-knowledge of the runoff.

A snow survey consists of a series of about ten samples taken with specially designed snow sampling equipment along a permanently marked line, about 1000 feet in length, called a snow course. The use of snow sampling equipment provides snow depth and water equivalent values for each sampling point. The average of these values is reported as the snow survey measurement for a snow course.

Snow surveys are made monthly or semi-monthly beginning in January or February and continue through the snow season until April, May or June. Currently more than 1400 western snow courses are measured each year. These measurements furnish the key data for water supply forecasts.

By relating snow survey measurements taken over a period of years to spring-summer runoff during the same period, relationships have been developed which make it possible to forecast seasonal runoff several months in advance of occurrence. In order to make a forecast, once a forecast relationship has been developed, the maximum snow water content at previously selected key snow courses is usually entered in the forecast relationship. More accurate forecasts are often obtained when other factors such as soil moisture, base flow and spring precipitation are considered and included in the forecast relationships.

Listed below are the Federal-State-Private Cooperative Snow Survey and Water Supply Forecast reports available for the West which contain detailed information on snow survey measurements, streamflow forecasts, reservoir storage, soil moisture and other guide data to water management and conservation decisions.

PUBLISHED BY SOIL CONSERVATION SERVICE

<u>REPORTS</u>	<u>ISSUED</u>	<u>LOCATION</u>	<u>COOPERATING WITH</u>
RIVER BASINS			
COLORADO AND STATE OF UTAH	MONTHLY (JAN.-JUNE)	SALT LAKE CITY, UTAH	UTAH STATE ENGINEER AND OTHER AGENCIES
COLUMBIA	MONTHLY (JAN.-MAY)	BOISE, IDAHO	IDAHO STATE RECLAMATION ENGINEER
UPPER MISSOURI AND STATE OF MONTANA	MONTHLY (FEB.-JUNE)	BOZEMAN, MONTANA	MONT. AGR. EXP. STATION
WEST-WIDE	OCT. 1, APR. 1, MAY 1	PORTLAND, OREGON	ALL COOPERATORS
STATES			
ALASKA	MONTHLY (MAR.-MAY)	PALMER, ALASKA	ALASKA S.C.D.
ARIZONA	SEMI-MONTHLY (JAN.15 - APR.1)	PHOENIX, ARIZONA	SALT R. VALLEY WATER USERS ASSOC. ARIZ. AGR. EXP. STATION
COLORADO AND NEW MEXICO	MONTHLY (FEB.-MAY)	FORT COLLINS, COLORADO	COLO. AGR. EXP. STATION COLO. STATE ENGINEER N. MEX. STATE ENGINEER
IDAHO	MONTHLY (FEB.-MAY)	BOISE, IDAHO	IDAHO STATE RECLAMATION ENGINEER
NEVADA	MONTHLY (JAN.-MAY)	RENO, NEVADA	NEVADA DEPT. OF CONSERVATION AND NATURAL RESOURCES DIVISION OF WATER RESOURCES
OREGON	MONTHLY (JAN.-JUNE)	PORTLAND, OREGON	ORE. AGR. EXP. STATION OREGON STATE ENGINEER
WASHINGTON	MONTHLY (FEB.-JUNE)	SPOKANE, WASHINGTON	WN. STATE DEPT. OF CONSERVATION
WYOMING	MONTHLY (FEB.-JUNE)	CASPER, WYOMING	WYOMING STATE ENGINEER

Copies of these various reports may be secured from:

Head, Water Supply Forecasting Section
Soil Conservation Service
P.O. Box 4170, Portland 8, Oregon

PUBLISHED BY OTHER AGENCIES

<u>REPORTS</u>	<u>ISSUED</u>	<u>AGENCY</u>
BRITISH COLUMBIA	MONTHLY (FEB.-JUNE)	COMPTROLLER, WATER RIGHTS BR., DEPT. OF LANDS AND FORESTS, PARLIAMENT BLDG., VICTORIA, B.C., CANADA
CALIFORNIA	MONTHLY (FEB.-MAY)	CALIF. DEPT. OF WATER RESOURCES, SACRAMENTO, CALIF.

WATER SUPPLY OUTLOOK
and
FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS
for
ARIZONA

(Salt, Verde, Gila and Part of Lower Colorado River Basin)

Report prepared by

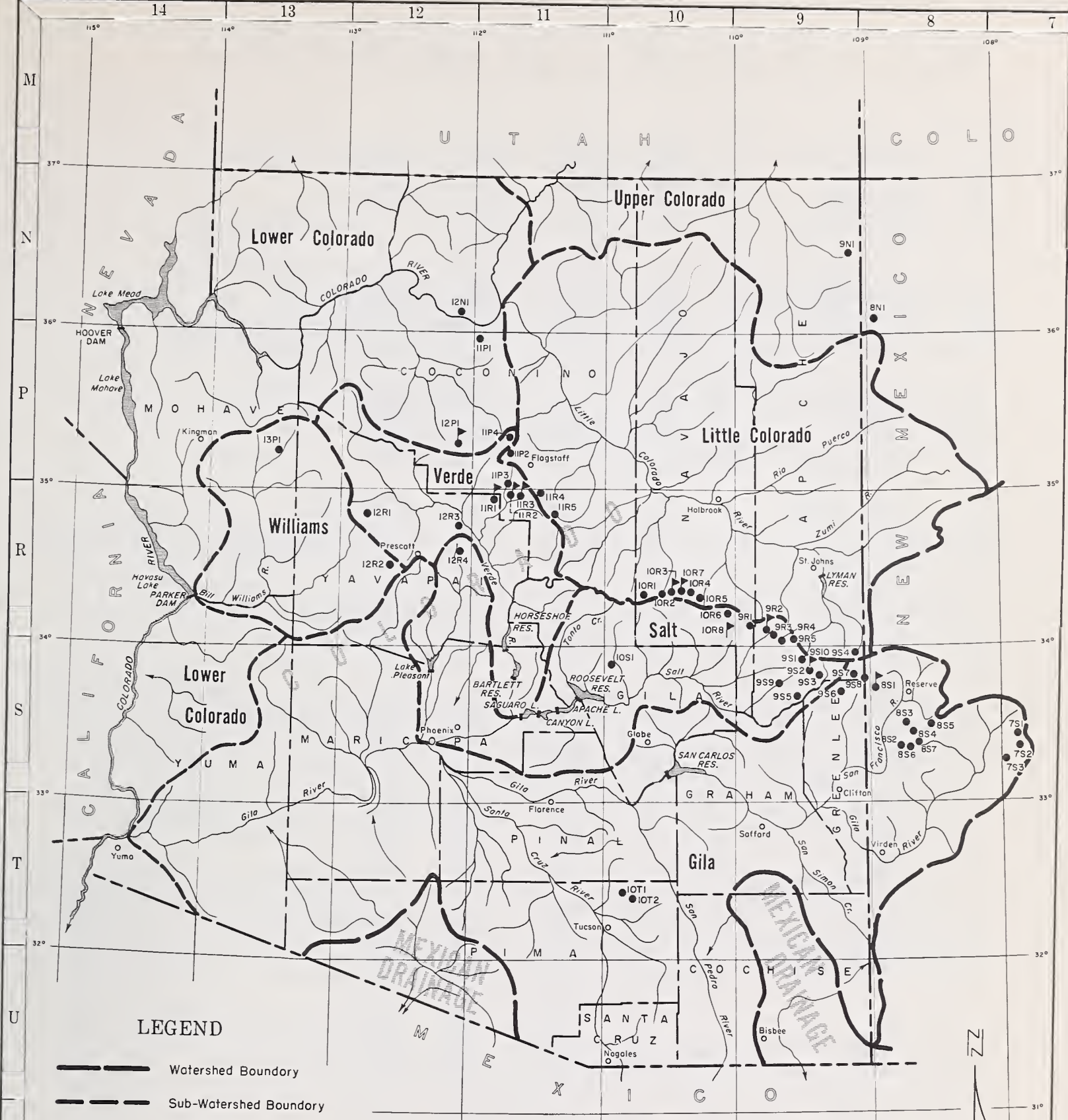
RICHARD W. ENZ...SNOW SURVEY SUPERVISOR
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Issued by

ROBERT V. BOYLE
STATE CONSERVATIONIST
SOIL CONSERVATION SERVICE

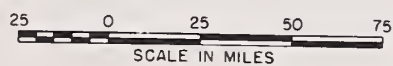
VICTOR I. CORBELL
PRESIDENT
SALT RIVER VALLEY WATER USERS ASSOCIATION





ARIZONA COOPERATIVE SNOW SURVEYS Snow Courses and Sub-Watersheds

JANUARY 1962



INDEX to SNOW COURSES and SOIL MOISTURE STATIONS

NUMBER **	NAME	SEC	TWP	RGE ***	ELEVATION	RIVER BASIN
11P3	Antelope Park	29	19N	8E	7300	Verde.....Discontinued
9S1	Baldy (p)	28	7N	27E	9125	Salt-Little Colorado
10T1	Bear Wallow	6	12S	16E	8100	Gila
9S6	Beaver Head	13	4N	30E	8000	Salt-Frisco
9S3	Big Lake Knoll	2	5N	28E	8800	Salt-Frisco-Little Colorado-- Discontinued
7S3	Black Canyon	8	13S	11W****	6790	Gila.....Discontinued
9S10-*	Black River Divide	11	6N	27E	9100	Salt-Little Colorado
12N1	Bright Angel	34	33N	3E	8400	Lower Colorado
12R1	Camp Wood	3	16N	6W	5700	Williams-Verde
10R3-M	Canyon Creek	18	11N	15E	7500	Salt-Little Colorado--Replaced by 10R7-M
10R7-M	Canyon Creek #2	18	11N	15E	7500	Salt-Little Colorado
11R2-M	Casner Park	19	18N	8E	6930	Verde
12P1-M	Chalender	27	22N	3E	7100	Verde
10R8-*	Corduroy Creek	Lat.34°07'N. Long.110°08'W.			§ 6000	Salt
9S9	Corn Creek (p)	Lat.33°45'N. Long.109°45'W.			§ 7730	Salt..... Not Read
8S3	Corner Mountain	7	10S	17W****	8850	Gila-Frisco..... Not Read
9S7	Coronado Trail	26	5N	30E	8000	Salt-Frisco
10R2	Elk	31	11N	14E	7600	Salt-Little Colorado...Discontinued
10R6	Forest Dale	2	9N	21E	6430	Salt-Little Colorado
11P2	Fort Valley	22	22N	6E	7350	Verde-Little Colorado
9R5	Ft. Apache	18	7N	27E	9160	Salt-Little Colorado
8S1-M	Frisco Divide	31	6S	20W****	8000	Frisco-Gila
12R4	Gaddes Canyon	11	15N	2E	7600	Verde-Agua Fria
10R5	Gentry	36	11N	15E	7600	Salt
11P1	Grand Canyon	21	30N	4E	7500	Lower Colorado
11R5	Happy Jack	30	17N	9E	7630	Verde
10R4	Heber (p)	28	11N	15E	7600	Salt-Little Colorado
8S6	Ice King	6	11S	18W	8020	Frisco-Gila
7S2	Inman	6	11S	10W****	7800	Gila
12R2	Iron Springs	22	14N	3W	6200	Williams-Verde
9S2	Maverick Fork (p)	13	6N	27E	9050	Salt
9R4	McKay Peak	13	7N	24E	8250	Salt..... Not Read
9R2-M	McNary	14	8N	23E	7200	Salt-Little Colorado
9R1	Milk Ranch	28	8N	23E	7000	Salt
12R3	Mingus Mountain	3	15N	2E	7100	Verde-Agua Fria
8S2	Mogollon	2	11S	19W****	7000	Frisco-Gila
11R4	Mormon Lake	13	18N	8E	7350	Verde-Little Colorado
11R3-M	Mormon Mountain	14	18N	8E	7500	Verde
11R1-M	Munds Park	7	18N	7E	6500	Verde
8S4	N-Bar Lake	16	10S	17W****	8600	Gila..... Not Read
8S5	Negrito	6	10S	16W****	8200	Gila..... Not Read
9S4	Nutriso	23	6N	30E	8500	Salt-Frisco-Little Colorado
9S5	Pacheta	At Town of Maverick, Ariz.			7800	Salt
8S7	Redstone Trail	5	11S	18W	8600	Frisco-Gila
9N1	Roof Butte	15	8N	6W*****	8500	Little Colorado... Not Read
10T2	Rose Canyon	15	12S	16E	7300	Gila
11P4	Snow Bowl	36	23N	6E	10,260	Verde
9S8	State Line	6	6S	21W****	8000	Gila-Frisco
7S1	Taylor Creek	20	10S	10W****	7850	Gila
9R3	Trout Creek	5	7N	24E	6400	Salt..... Not Read
8N1	Washington Pass	Lat.36°05'N. Long.108°50'W			8600	Little Colorado- Not Read
13P1	Willow Ranch	16	21N	11W	5000	Williams
10R1	Woods Canyon	15	11N	13E	7640	Salt-Little Colorado--Discontinued
10S1	Workman Creek	33	6N	14E	6900	Salt

* SOIL MOISTURE STATION ONLY

** NUMBER INDICATES LOCATION OF SNOW COURSE WITHIN COORDINATE RECTANGLE.
THUS 9N1 IS COURSE #1 IN COORDINATE RECTANGLE 9N.

*** ALL IN GILA AND SALT RIVER BASIN AND MERIDIAN EXCEPT WHERE OTHERWISE
INDICATED.

**** NEW MEXICO PRINCIPAL MERIDIAN

***** NAVAJO BASE

M SOIL MOISTURE STATION INSTALLED ON OR IN VICINITY OF SNOW COURSE.

§ UNSURVEYED

(p) STORAGE GAGE INSTALLED ON OR IN VICINITY OF SNOW COURSE.

ARIZONA WATER SUPPLY OUTLOOK

MARCH 1, 1962

* * * * *

* The Water Supply Outlook for Arizona is very good.*

* Continued heavy runoff occurred the last half of *

* February, and additional storms replaced much of *

* the snow melted earlier this month. Statewide, *

* streamflow forecasts are 176% of average, and *

* reservoir storage is 142% of average. *

* * * * *

SNOW COVER: Good storms the last half of February have increased the snow pack to near the February 1 level. Only a limited area on the Gila River Watershed has less snow than two weeks ago. The Salt River and Verde River Watersheds have twice the normal snow cover for this date. The Gila River Watershed now has a snow pack of 170% of average.

RESERVOIR STORAGE: Heavy runoff during January and February has increased reservoir storage to 1,311,000 in the eight major Reservoirs serving central Arizona; this is 143% of average and 38% of capacity. The Salt River Project Reservoirs are 54% capacity and 143% of average. San Carlos Reservoir with 169,000 acre feet in storage is 165% of average, but still only 14% of capacity.

STREAM FLOW AND WATER SUPPLY: Streamflow was up in all major streams in Arizona during February. Rivers serving the Salt River Project produced 220,000 acre feet in February and 99,000 acre feet in January. On the Gila River at the Head of the Safford Valley 114,000 acre feet was measured during February, and 71,000 during January.

Current streamflow forecasts are 167% of average on the Salt River Project. Forecasts on the Gila and Frisco Rivers have been reduced, but are still 223% of average. The Verde River forecast has been increased slightly as a result of late February storms.

SOIL MOISTURE: As a result of early February melting of snow and additional precipitation last week, soil moisture is very good on the Verde, Salt, and Little Colorado Watersheds. On the Gila Watershed less precipitation has occurred, but soil moisture is still good. Good storms in March will produce very good runoff this season.



STREAM FLOW FORECASTS - MARCH 1, 1962

The following summarized runoff forecasts are based principally on mountain snow cover and on the assumption that precipitation and temperature will be near average from the present time to the end of the forecast period. Appreciable deviations from normal of temperature and/or precipitation will correspondingly modify these forecasts.

SUB-WATERSHED, STREAM and STATION	SEASONAL STREAM FLOW IN THOUSANDS OF ACRE FEET					
	FORECAST PERIOD		MARCH - MAY			INCLUSIVE
	Forecast	Percent	Measured Runoff			1943-57
	Runoff 1962	15-Year Average	1961	1960	1959	Average
Salt River at Intake	410	204	65.1	320.0	36.3	200.4
Tonto River above Roosevelt	29	116	4.8	40.3	3.3	25.0
Verde River above Horseshoe	145	116	46.3	139.3	38.6	124.9
Gila River at Virden	53	210	12.9	58.7	7.0	27.6
Frisco River at Clifton	60	237	10.6	59.2	7.4	25.3
Little Colorado River above Lyman Dam *	20	357	1.0	13.5	0.8	5.6

* Forecast period for Little Colorado River above Lyman Dam is for March - June, inclusive.



STATUS OF ARIZONA RESERVOIR STORAGE - ABOUT MARCH 1, 1962

SUB- WATERSHED and/or STREAM	RESERVOIR	USABLE CAPACITY 1000s AC. FT.	USABLE STORAGE - 1000s ACRE FEET			
			1962	1961	1960	15-Year Average 1943-57
<u>GILA RIVER SUB-WATERSHED</u>						
Agua Fria	Lake Pleasant	163.8	14.6	26.8	48.8	24.9
Gila	San Carlos	1,206.0	169.0	3.1	205.8	102.2
Verde	Bartlett	179.5	100.0	39.7	121.7	54.4
Verde	Horseshoe	142.8	33.4	1.5	124.6	16.8 *
Salt	Roosevelt	1,382.0	689.8	841.4	834.1	432.8
Salt	Apache	245.0	184.0	241.6	238.8	203.5
Salt	Canyon	58.0	53.3	47.3	57.8	42.4
Salt	Saguaro	70.0	66.7	65.8	69.0	38.5
<u>LOWER COLORADO RIVER SUB-WATERSHED</u>						
Colorado	Lake Havasu	619.4	531.9	536.2	551.7	559.2
Colorado	Lake Mohave	1,810.0	1,749.8	1,702.0	1,728.0	1,467.0 *
Colorado	Lake Mead	27,207.0	18,249.0	18,755.0	19,121.0	16,929.0
Little Colorado	Lyman	30.6	3.6	6.8	10.6	6.3
Little Colorado	Show Low Lake	5.1	5.1	0.1	4.7	--

* Average is for less than 15 years of record in the 1943-57 period.



WATER SUPPLY INVENTORY
SALT RIVER VALLEY SYSTEM
MARCH 1, 1962

3,000,000

2,500,000

2,000,000

1,500,000

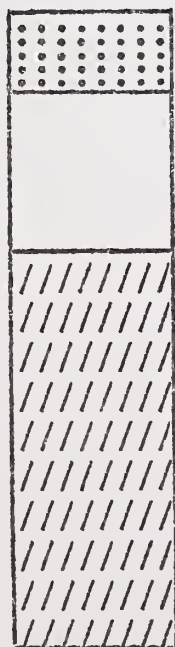
1,000,000

500,000

0

A C R E F E E T

AVERAGE SUPPLY
 on
MARCH 1

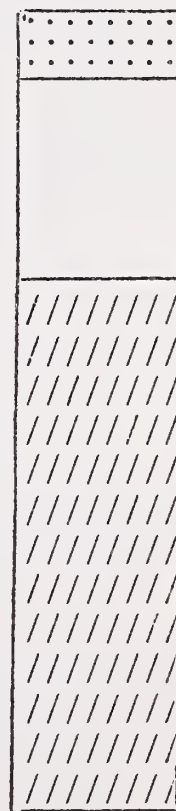


Average Summer
Runoff

Average Spring
Runoff

Average
Storage

ANTICIPATED 1962 SUPPLY *



Average
Summer Runoff

Forecasted
Runoff
(March-May)

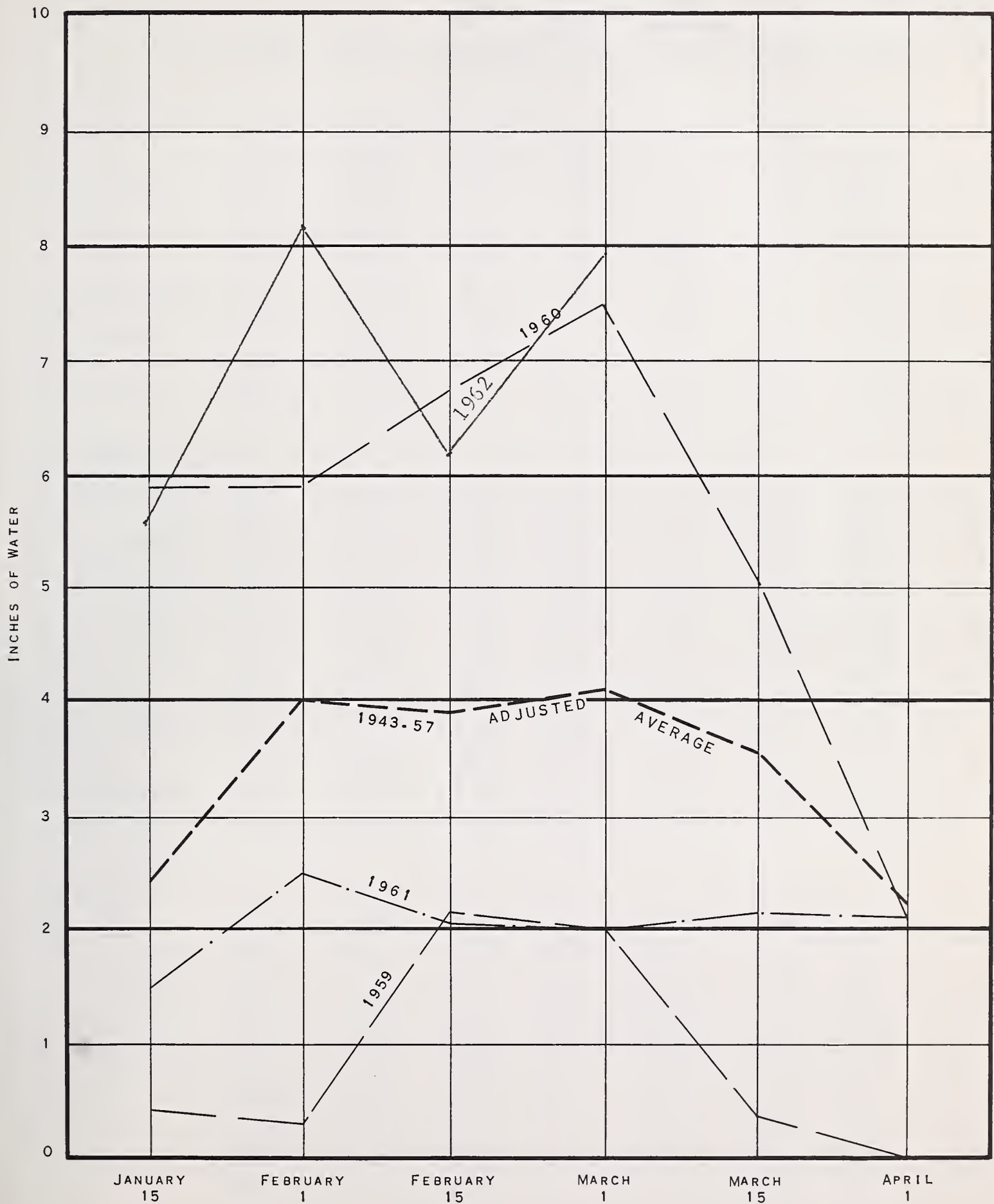
Present
Storage

* Based on present Storage + Forecasted Spring runoff + Average Summer runoff.



RELATIVE SNOW WATER ACCUMULATION ARIZONA

MARCH 1, 1962



This graph represents the average snow water content on eleven selected snow courses on Arizona Sub-Watersheds.

1871



ARIZONA SNOW SURVEYS - ABOUT MARCH 1, 1962

SUB-WATERSHED and SNOW COURSE			SNOW COVER MEASUREMENTS					
			1962			PAST RECORD		
			Date of Survey	Snow Depth (In.)	Water Content (In.)	Water Content (Inches) 1943-57 Average		
No.	Elev.					1961	1960	
<u>GILA RIVER</u>								
Redstone Trail	8S7	8600	2/27	49	17.8	4.6	---	---
Nutrioso	9S4	8500	2/28	11	2.1	1.0	3.8	1.7
Bear Wallow	10T1	8100	2/28	38	13.0	0.7	10.7	2.4 **
Frisco Divide	8S1-M	8000	2/28	12	2.3	1.4	4.7	1.7
Ice King	8S6	8000	2/27	36	11.3	3.9	---	---
State Line	9S8	8000	2/28	11	2.5	1.1	5.4	2.1
Coronado Trail	9S7	8000	2/28	12	3.1	1.6	4.7	2.3
Beaver Head	9S6	8000	2/28	21	5.8	2.1	5.6	2.3
Taylor Creek	7S1	7850	2/27	T	T	0.0	T	0.4
Inman	7S2	7800	2/27	T	T	0.0	0.4	0.4 **
Rose Canyon	10T2	7300	2/28	27	8.4	0.0	5.8	0.8 **
Mogollon	8S2	7000	2/27	11	5.1	1.8	3.2	1.4 **
<u>SALT RIVER</u>								
Ft. Apache *	9R5	9160	2/27	55	15.4	5.1	12.3	8.0 **
Baldy *	9S1	9125	2/27	53	15.0	5.1	11.8	7.4 **
Maverick Fork	9S2	9050	2/27	68	18.4	5.9	12.7	9.0 **
Nutrioso	9S4	8500	2/28	11	2.1	1.0	3.8	1.7
Coronado Trail	9S7	8000	2/28	12	3.1	1.6	4.7	2.3
Beaver Head	9S6	8000	2/28	21	5.8	2.1	5.6	2.3
Pacheta	9S5	7800	2/28	31	8.0	0.0	5.0	2.6 **
Gentry	10R5	7600	2/28	29	5.7	0.3	8.0	4.2 **
Heber	10R4	7600	2/28	32	6.8	0.7	9.0	4.3 **
Canyon Creek #2	10R7-M	7500	2/28	31	6.8	0.7	8.7	---
McNary	9R2-M	7200	2/27	25	4.7	T	7.7	2.4
Milk Ranch	9R1	7000	2/27	17	2.5	T	4.5	0.9
Workman Creek	10S1	6900	2/27	46	12.6	T	10.4	3.4 **
Forest Dale	10R6	6430	2/26	15	1.7	T	2.7	1.0
<u>VERDE RIVER</u>								
Snow Bowl	11P4	10260	3/1	60	14.3	No Survey	--	---
Happy Jack	11R5	7630	2/28	24	9.3	T	11.1	3.8 **
Gaddes Canyon	12R4	7600	2/28	38	10.6	0.8	9.4	---
Mormon Mountain	11R3-M	7500	3/1	44	12.3	1.0	9.6	6.5 **
Mormon Lake *	11R4	7350	3/1	34	8.3	1.1	7.5	4.5 **
Fort Valley *	11P2	7350	2/28	26	6.0	0.0	5.6	2.3 **
Mingus Mountain	12R3	7100	2/28	11	1.9	0.0	2.5	1.2 **
Chalender	12P1-M	7100	2/28	28	6.4	0.6	6.1	2.8 **
Casner Park	11R2-M	6930	3/1	30	8.1	T	7.5	2.8 **
Munds Park	11R1-M	6500	3/1	18	4.4	0.0	5.4	2.4 **
Iron Springs *	12R2	6200	2/26	7	1.7	T	0.0	0.9 **
Camp Wood	12R1	5700	2/28	11	1.7	0.0	0.6	0.8 **

* On Adjacent Drainage

** 1943-57 Adjusted Average

ARIZONA SNOW SURVEYS - ABOUT MARCH 1, 1962

SUB-WATERSHED and SNOW COURSE			SNOW COVER MEASUREMENTS					
			1962			PAST RECORD		
			Date of Survey	Snow Depth (In.)	Water Content (In.)	Water Content (Inches) 1943-57 Average		
No.	Elev.					1961	1960	
<u>WILLIAMS RIVER</u>								
Iron Springs	12R2	6200	2/26	7	1.7	T	0.0	0.9 **
Camp Wood *	12R1	5700	2/28	11	1.7	0.0	0.6	0.8 **
Willow Ranch	13P1	5000	3/1	T	T	0.0	0.0	0.4 **
<u>LOWER COLORADO RIVER</u>								
Bright Angel	12N1	8400	2/28	42	9.5	5.8	---	9.4 **
Grand Canyon	11P1	7500	2/28	12	3.7	0.3	4.6	2.0 **
Fort Valley	11P2	7350	2/28	26	6.0	0.0	5.6	2.3 **
Chalender *	12P1-M	7100	2/28	28	6.4	0.6	6.1	2.8 **
<u>LITTLE COLORADO RIVER</u>								
Ft. Apache	9R5	9160	2/27	55	15.4	5.1	12.3	8.0 **
Baldy	9S1	9125	2/27	53	15.0	5.1	11.8	7.4 **
Nutriosio	9S4	8500	2/28	11	2.1	1.0	3.8	1.7
Happy Jack *	11R5	7630	2/28	24	9.3	T	11.1	3.8 **
Gentry	10R5	7600	2/28	29	5.7	0.3	8.0	4.2 **
Heber	10R4	7600	2/28	32	6.8	0.7	9.0	4.3 **
Canyon Creek #2	10R7-M	7500	2/28	31	6.8	0.7	8.7	---
Mormon Mountain	11R3-M	7500	3/1	44	12.3	1.0	9.6	6.5 **
Mormon Lake	11R4	7350	3/1	34	8.3	1.1	7.5	4.5 **
Fort Valley	11P2	7350	2/28	26	6.0	0.0	5.6	2.3 **
McNary	9R2-M	7200	2/27	25	4.7	T	7.7	2.4
Forest Dale	10R6	6430	2/26	15	1.7	T	2.7	1.0

* On Adjacent Drainage

** 1943-57 Adjusted Average

DELAYED REPORT RECEIVED SINCE LAST BULLETIN - FEBRUARY 15, 1962

VERDE RIVER

Snow Bowl	11P4	10260	2/16	43	10.9
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LIST OF SNOW SURVEYORS

SNOW COURSE

SURVEYOR

Baldy -----	SCS and SRVWUA
Bear Wallow -----	Forest Service - David Park
Beaver Head -----	N. A. Josh
Bright Angel -----	National Park Service
Camp Wood -----	Mrs. C. C. Merritt
Canyon Creek #2 ----	SCS and SRVWUA
Casner Park -----	SCS and SRVWUA
Chalender -----	Forest Service - MacIntyre
Coronado Trail -----	Forest Service - Bill Brainard & W. L. Sanders
Forest Dale -----	Fort Apache Reservation - Boyer and Endfield
Frisco Divide -----	Forest Service - Joe Clayton
Ft. Apache -----	SCS and SRVWUA
Fort Valley -----	Rocky Mountain Forest & Range Experiment Station
Gaddes Canyon -----	SCS - Bill Gray
Gentry -----	SCS and SRVWUA
Grand Canyon -----	National Park Service - Robt. Heyder
Happy Jack -----	Emil O. Ryberg
Heber -----	SCS and SRVWUA
Ice King -----	James R. Wray
Inman -----	C. H. McCauley
Iron Springs -----	Ernest Saxby
McNary -----	Fort Apache Reservation - Boyer and Endfield
Maverick Fork -----	SCS and SRVWUA
Milk Ranch -----	Fort Apache Reservation - Boyer and Endfield
Mingus Mountain ----	SCS - Bill Gray
Mogollon -----	James R. Wray
Mormon Lake -----	SCS and SRVWUA
Mormon Mountain ----	SCS and SRVWUA
Munds Park -----	SCS and SRVWUA
Nutrioso -----	Forest Service - Bill Brainard & W. L. Sanders
Pacheta -----	Foch Phillips
Redstone Trail -----	James R. Wray
Rose Canyon -----	Forest Service - David Park
Snow Bowl -----	Forest Service - Jay Shoemaker
State Line -----	Forest Service - Joe Clayton
Taylor Creek -----	C. H. McCauley
Willow Ranch -----	Tiny Miller
Workman Creek -----	Rocky Mountain Forest & Range Experiment Station

The Following Organizations Cooperate in the Arizona Snow Survey Work

FEDERAL

Department of Agriculture

Soil Conservation Service

Forest Service

Apache Forest

Coconino Forest

Coronado Forest

Gila Forest

Kaibab Forest

Prescott Forest

Rocky Mountain Forest and Range Experiment Station

Tonto Forest

Department of Commerce

Weather Bureau

Arizona Section

Department of Interior

Bureau of Reclamation

Region III

Geological Survey

Arizona District

Bureau of Indian Affairs

Fort Apache Reservation

San Carlos Irrigation Project

National Park Service

Grand Canyon National Park

Gila Water Commissioner

Safford, Arizona

STATE

Arizona Agricultural Experiment Station

IRRIGATION PROJECTS

Salt River Valley Water Users' Association

Phoenix, Arizona

San Carlos Irrigation and Drainage District

Coolidge, Arizona

PRIVATE

Southwest Lumber Mills, Inc.

McNary, Arizona

Other organizations and individuals furnish valuable information for the snow survey reports. Their cooperation is gratefully acknowledged.

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
ROOM 6015 FEDERAL BUILDING
PHOENIX 25, ARIZONA

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FEDERAL - STATE - PRIVATE
COOPERATIVE SNOW SURVEYS

Furnishes the basic data
necessary for forecasting
water supply for irrigation,
domestic and municipal water
supply, hydro-electric power
generation, navigation,
mining and industry

*"The Conservation of Water begins
with the Snow Survey"*

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U.S. D. T. CULTURE
1 7
APR 10 1962
CURRENT SERIAL RECORDS

WATER SUPPLY OUTLOOK

and

FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS for ARIZONA

UNITED STATES DEPARTMENT of AGRICULTURE--SOIL CONSERVATION SERVICE,
SALT RIVER VALLEY WATER USERS ASSOCIATION
and
ARIZONA AGRICULTURAL EXPERIMENT STATION

Data included in this report were obtained by the agencies
named above in cooperation with the Federal, State and pri-
vate organizations listed on the last page of this report.

AS OF
MAR. 15. 1962

UNITED STATES DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE

To Recipients of Cooperative Snow Survey and Water Supply Forecast Reports:

The climate of the cultivated and populated areas of the West is characterized by relatively dry summer months. Such precipitation as occurs falls mostly in the winter and early spring months when it is of little immediate benefit to growing crops. Fortunately, most of this precipitation falls as mountain snow which stays on the ground for months, melting later to sustain streamflow during the period of greatest demand during late spring and summer. Thus, nature provides in mountain snow an imposing water storage facility.

The amount of water stored in mountain snow varies from place to place as well as from year to year and accordingly, so does the runoff of the streams. The best seasonal management of variable western water supplies results from fore-knowledge of the runoff.

A snow survey consists of a series of about ten samples taken with specially designed snow sampling equipment along a permanently marked line, about 1000 feet in length, called a snow course. The use of snow sampling equipment provides snow depth and water equivalent values for each sampling point. The average of these values is reported as the snow survey measurement for a snow course.

Snow surveys are made monthly or semi-monthly beginning in January or February and continue through the snow season until April, May or June. Currently more than 1400 western snow courses are measured each year. These measurements furnish the key data for water supply forecasts.

By relating snow survey measurements taken over a period of years to spring-summer runoff during the same period, relationships have been developed which make it possible to forecast seasonal runoff several months in advance of occurrence. In order to make a forecast, once a forecast relationship has been developed, the maximum snow water content at previously selected key snow courses is usually entered in the forecast relationship. More accurate forecasts are often obtained when other factors such as soil moisture, base flow and spring precipitation are considered and included in the forecast relationships.

Listed below are the Federal-State-Private Cooperative Snow Survey and Water Supply Forecast reports available for the West which contain detailed information on snow survey measurements, streamflow forecasts, reservoir storage, soil moisture and other guide data to water management and conservation decisions.

PUBLISHED BY SOIL CONSERVATION SERVICE

<u>REPORTS</u>	<u>ISSUED</u>	<u>LOCATION</u>	<u>COOPERATING WITH</u>
RIVER BASINS			
COLORADO AND STATE OF UTAH	MONTHLY (JAN.-JUNE)	SALT LAKE CITY, UTAH	UTAH STATE ENGINEER AND OTHER AGENCIES
COLUMBIA	MONTHLY (JAN.-MAY)	BOISE, IDAHO	IDAHO STATE RECLAMATION ENGINEER
UPPER MISSOURI AND STATE OF MONTANA	MONTHLY (FEB.-JUNE)	BOZEMAN, MONTANA	MONT. AGR. EXP. STATION
WEST-WIDE	OCT. 1, APR. 1, MAY 1	PORTLAND, OREGON	ALL COOPERATORS
STATES			
ALASKA	MONTHLY (MAR.-MAY)	PALMER, ALASKA	ALASKA S.C.D.
ARIZONA	SEMI-MONTHLY (JAN.15 - APR.1)	PHOENIX, ARIZONA	SALT R. VALLEY WATER USERS ASSOC. ARIZ. AGR. EXP. STATION
COLORADO AND NEW MEXICO	MONTHLY (FEB.-MAY)	FORT COLLINS, COLORADO	COLO. AGR. EXP. STATION COLO. STATE ENGINEER N. MEX. STATE ENGINEER
IDAHO	MONTHLY (FEB.-MAY)	BOISE, IDAHO	IDAHO STATE RECLAMATION ENGINEER
NEVADA	MONTHLY (JAN.-MAY)	RENO, NEVADA	NEVADA DEPT. OF CONSERVATION AND NATURAL RESOURCES DIVISION OF WATER RESOURCES
OREGON	MONTHLY (JAN.-JUNE)	PORTLAND, OREGON	ORE. AGR. EXP. STATION OREGON STATE ENGINEER
WASHINGTON	MONTHLY (FEB.-JUNE)	SPOKANE, WASHINGTON	WN. STATE DEPT. OF CONSERVATION
WYOMING	MONTHLY (FEB.-JUNE)	CASPER, WYOMING	WYOMING STATE ENGINEER

Copies of these various reports may be secured from:

Head, Water Supply Forecasting Section
Soil Conservation Service
P.O. Box 4170, Portland 8, Oregon

PUBLISHED BY OTHER AGENCIES

<u>REPORTS</u>	<u>ISSUED</u>	<u>AGENCY</u>
BRITISH COLUMBIA	MONTHLY (FEB.-JUNE)	COMPTROLLER, WATER RIGHTS BR., DEPT. OF LANDS AND FORESTS, PARLIAMENT BLDG., VICTORIA, B.C., CANADA
CALIFORNIA	MONTHLY (FEB.-MAY)	CALIF. DEPT. OF WATER RESOURCES, SACRAMENTO, CALIF.

WATER SUPPLY OUTLOOK
and
FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS
for
ARIZONA

(Salt, Verde, Gila and Part of Lower Colorado River Basin)

Report prepared by

RICHARD W. ENZ...SNOW SURVEY SUPERVISOR
SOIL CONSERVATION SERVICE
ROOM 6015 FEDERAL BUILDING
PHOENIX 25, ARIZONA

Issued by

ROBERT V. BOYLE
STATE CONSERVATIONIST
SOIL CONSERVATION SERVICE

VICTOR I. CORBELL
PRESIDENT
SALT RIVER VALLEY WATER USERS ASSOCIATION





INDEX to SNOW COURSES and SOIL MOISTURE STATIONS

NUMBER **	NAME	SEC	TWP	RGE ***	ELEVATION	RIVER BASIN
11P3	Antelope Park	29	19N	8E	7300	Verde.....Discontinued
9S1	Baldy (p)	28	7N	27E	9125	Salt-Little Colorado
10T1	Bear Wallow	6	12S	16E	8100	Gila
9S6	Beaver Head	13	4N	30E	8000	Salt-Frisco
9S3	Big Lake Knoll	2	5N	28E	8800	Salt-Frisco-Little Colorado-- Discontinued
7S3	Black Canyon	8	13S	11W****	6790	Gila.....Discontinued
9S10-*	Black River Divide	11	6N	27E	9100	Salt-Little Colorado
12N1	Bright Angel	34	33N	3E	8400	Lower Colorado
12R1	Camp Wood	3	16N	6W	5700	Williams-Verde
10R3-M	Canyon Creek	18	11N	15E	7500	Salt-Little Colorado--Replaced by 10R7-M
10R7-M	Canyon Creek #2	18	11N	15E	7500	Salt-Little Colorado
11R2-M	Casner Park	19	18N	8E	6930	Verde
12F1-M	Chalender	27	22N	3E	7100	Verde
10R8-*	Corduroy Creek	Lat.34°07'N. Long.110°08'W.			§ 6000	Salt
9S9	Corn Creek (p)	Lat.33°45'N. Long.109°45'W.			§ 7730	Salt..... Not Read
8S3	Corner Mountain	7	10S	17W****	8850	Gila-Frisco..... Not Read
9S7	Coronado Trail	26	5N	30E	8000	Salt-Frisco
10R2	Elk	31	11N	14E	7600	Salt-Little Colorado...Discontinued
10R6	Forest Dale	2	9N	21E	6430	Salt-Little Colorado
11P2	Fort Valley	22	22N	6E	7350	Verde-Little Colorado
9R5	Ft. Apache	18	7N	27E	9160	Salt-Little Colorado
8S1-M	Frisco Divide	31	6S	20W****	8000	Frisco-Gila
12R4	Gaddes Canyon	11	15N	2E	7600	Verde-Agua Fria
10R5	Gentry	36	11N	15E	7600	Salt
11P1	Grand Canyon	21	30N	4E	7500	Lower Colorado
11R5	Happy Jack	30	17N	9E	7630	Verde
10R4	Heber (p)	28	11N	15E	7600	Salt-Little Colorado
8S6	Ice King	6	11S	18W	8020	Frisco-Gila
7S2	Inman	6	11S	10W****	7800	Gila
12R2	Iron Springs	22	14N	3W	6200	Williams-Verde
9S2	Maverick Fork (p)	13	6N	27E	9050	Salt
9R4	McKay Peak	13	7N	24E	8250	Salt..... Not Read
9R2-M	McNary	14	8N	23E	7200	Salt-Little Colorado
9R1	Milk Ranch	28	8N	23E	7000	Salt
12R3	Mingus Mountain	3	15N	2E	7100	Verde-Agua Fria
8S2	Mogollon	2	11S	19W****	7000	Frisco-Gila
11R4	Mormon Lake	13	18N	8E	7350	Verde-Little Colorado
11R3-M	Mormon Mountain	14	18N	8E	7500	Verde
11R1-M	Munds Park	7	18N	7E	6500	Verde
8S4	N-Bar Lake	16	10S	17W****	8600	Gila..... Not Read
8S5	Negrito	6	10S	16W****	8200	Gila..... Not Read
9S4	Nutriso	23	6N	30E	8500	Salt-Frisco-Little Colorado
9S5	Pacheta	At Town of Maverick, Ariz.			7800	Salt
8S7	Redstone Trail	5	11S	18W	8600	Frisco-Gila
9N1	Roof Butte	15	8N	6W****	8500	Little Colorado... Not Read
10T2	Rose Canyon	15	12S	16E	7300	Gila
11P4	Snow Bowl	36	23N	6E	10,260	Verde
9S8	State Line	6	6S	21W****	8000	Gila-Frisco
7S1	Taylor Creek	20	10S	10W****	7850	Gila
9R3	Trout Creek	5	7N	24E	6400	Salt..... Not Read
8N1	Washington Pass	Lat.36°05'N. Long.108°50'W			8600	Little Colorado- Not Read
13P1	Willow Ranch	16	21N	11W	5000	Williams
10R1	Woods Canyon	15	11N	13E	7640	Salt-Little Colorado--Discontinued
10S1	Workman Creek	33	6N	14E	6900	Salt

* SOIL MOISTURE STATION ONLY

** NUMBER INDICATES LOCATION OF SNOW COURSE WITHIN COORDINATE RECTANGLE.
THUS 9N1 IS COURSE #1 IN COORDINATE RECTANGLE 9N.

*** ALL IN GILA AND SALT RIVER BASE AND MERIDIAN EXCEPT WHERE OTHERWISE
INDICATED.

**** NEW MEXICO PRINCIPAL MERIDIAN

***** NAVAJO BASE

M SOIL MOISTURE STATION INSTALLED ON OR IN VICINITY OF SNOW COURSE.

§ UNSURVEYED

(p) STORAGE GAGE INSTALLED ON OR IN VICINITY OF SNOW COURSE.

ARIZONA WATER SUPPLY OUTLOOK

MARCH 15, 1962

* The Water Supply Outlook for Arizona is very good.*
* Additional storms during March have increased the *
* snow pack to near 1952 levels. Streamflow fore- *
* casts are now twice average; reservoir storage is *
* 143% of average. *

SNOW COVER: Almost all snow courses showed an increase in water content over the last two weeks. Arizona now has the best snow cover in ten years; it is about $2\frac{1}{2}$ times the average for March 15. In some locations, all records have been exceeded. Mt. Lemmon has ten times its average snowpack and three times the previous high of 1952. The snow pack on the Salt River Watershed is 283% of average for this date. Snow cover on the Verde River and Gila River Watersheds is 239% and 220% of average respectively. Deepest snow measured was at Maverick Fork with 62" depth containing 20.2" of water.

RESERVOIR STORAGE: Reservoir storage has increased only slightly the last two weeks. Cool temperatures have slowed down runoff, and diversions from storage for early irrigation have been large in anticipation of good subsequent runoff. The Salt River Project Reservoirs are now 143% of average and 54% of capacity. San Carlos Reservoir is 165% of average but only 14% of capacity.

STREAM FLOW AND WATER SUPPLY: Additional storms in March have improved runoff prospects. Streamflow forecasts have been raised substantially on the Salt River and Tonto Creek. The Verde, Gila, and Little Colorado River forecasts have been increased slightly. Streamflow forecasts on the Salt River Project streams are twice average for the March through May period. The Gila River is forecast to flow two and one-third of average, and the Little Colorado River above Lyman Reservoir is predicted to produce three and one-half, times the average flow.

The Salt and Verde Rivers including Tonto Creek produced 85,400 acre feet the first half of March, while the Gila River at the Head of the Safford Valley produced 18,530 acre feet during the same period.

SOIL MOISTURE: Continued storms and cool temperatures have kept soil moisture high on all the Watersheds. Soil moisture measurements indicate most mountain soils are at field capacity or higher. Good storms the rest of March and April will produce very high runoff this year.

PRECIPITATION: Above normal precipitation occurred during February at most stations on the major runoff producing Watersheds. Of particular note is the Flagstaff record which now approaches the big year of 1949 for total precipitation for the winter.



STREAM FLOW FORECASTS - MARCH 15, 1962

The following summarized runoff forecasts are based principally on mountain snow cover and on the assumption that precipitation and temperature will be near average from the present time to the end of the forecast period. Appreciable deviations from normal of temperature and/or precipitation will correspondingly modify these forecasts.

SUB-WATERSHED, STREAM and STATION	SEASONAL STREAM FLOW IN THOUSANDS OF ACRE FEET					
	FORECAST PERIOD		MARCH - MAY			INCLUSIVE
	Forecast	Percent	Measured Runoff			1943-57
	Runoff	15-Year	1961	1960	1959	Average
	1962	Average				
Salt River at Intake	505	252	65.1	320.0	36.3	200.4
Tonto River above Roosevelt	40	160	4.8	40.3	3.3	25.0
Verde River above Horseshoe	152	122	46.3	139.3	38.6	124.9
Gila River at Virden	62	225	12.9	58.7	7.0	27.6
Frisco River at Clifton	60	237	10.6	59.2	7.4	25.3
Little Colorado River above Lyman Dam *	20	357	1.0	13.5	0.8	5.6

* Forecast period for Little Colorado River above Lyman Dam is for March - June, inclusive.

STATUS OF ARIZONA RESERVOIR STORAGE - ABOUT MARCH 15, 1962

SUB- WATERSHED and/or STREAM	RESERVOIR	USABLE CAPACITY 1000s AC. FT.	USABLE STORAGE - 1000s ACRE FEET			
			1962	1961	1960	15-Year Average 1943-57
GILA RIVER SUB-WATERSHED						
Agua Fria	Lake Pleasant	163.8	15.8	26.7	49.6	27.3
Gila	San Carlos	1,206.0	163.7	0.4	217.9	108.0
Verde	Bartlett	179.5	96.2	39.0	150.3	67.3
Verde	Horseshoe	142.8	21.1	9.4	109.1	20.5
Salt	Roosevelt	1,382.0	735.2	822.0	919.3	450.4
Salt	Apache	245.0	195.4	242.0	237.6	207.3
Salt	Canyon	58.0	54.6	50.3	57.3	44.3
Salt	Saguaro	70.0	66.5	65.2	68.0	44.5
LOWER COLORADO RIVER SUB-WATERSHED						
Colorado	Lake Havasu	619.4	549.9	542.7	547.6	566.1
Colorado	Lake Mohave	1,810.0	1,748.4	1,690.0	1,711.0	1,486.2
Colorado	Lake Mead	27,207.0	18,130.0	18,551.0	19,060.0	16,686.0
Little Colorado	Lyman	30.6	4.3	6.8	11.4	6.4
Little Colorado	Show Low Lake	5.1	5.1	0.0	5.2	--

* Average is for less than 15 years of record in the 1943-57 period.

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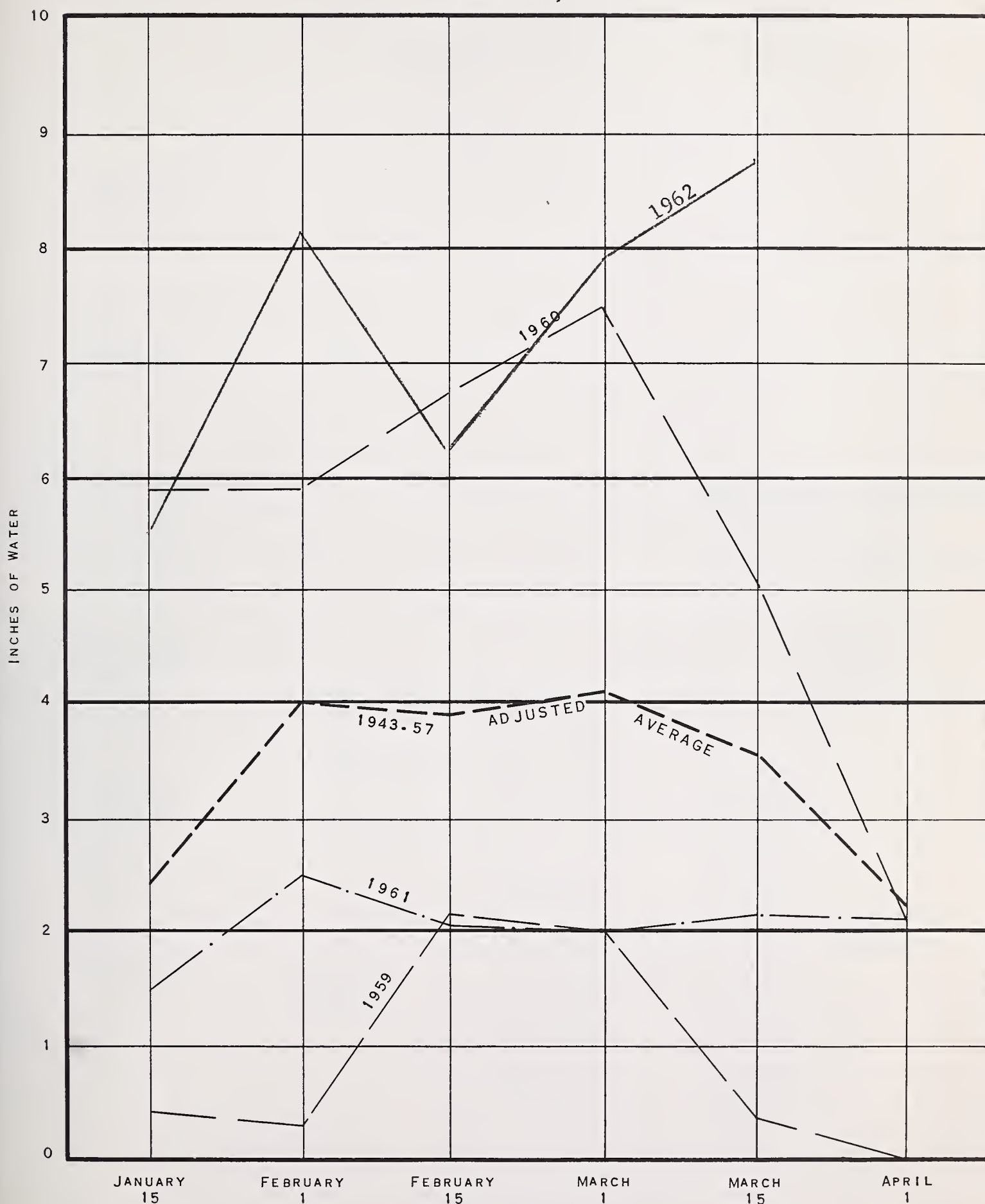
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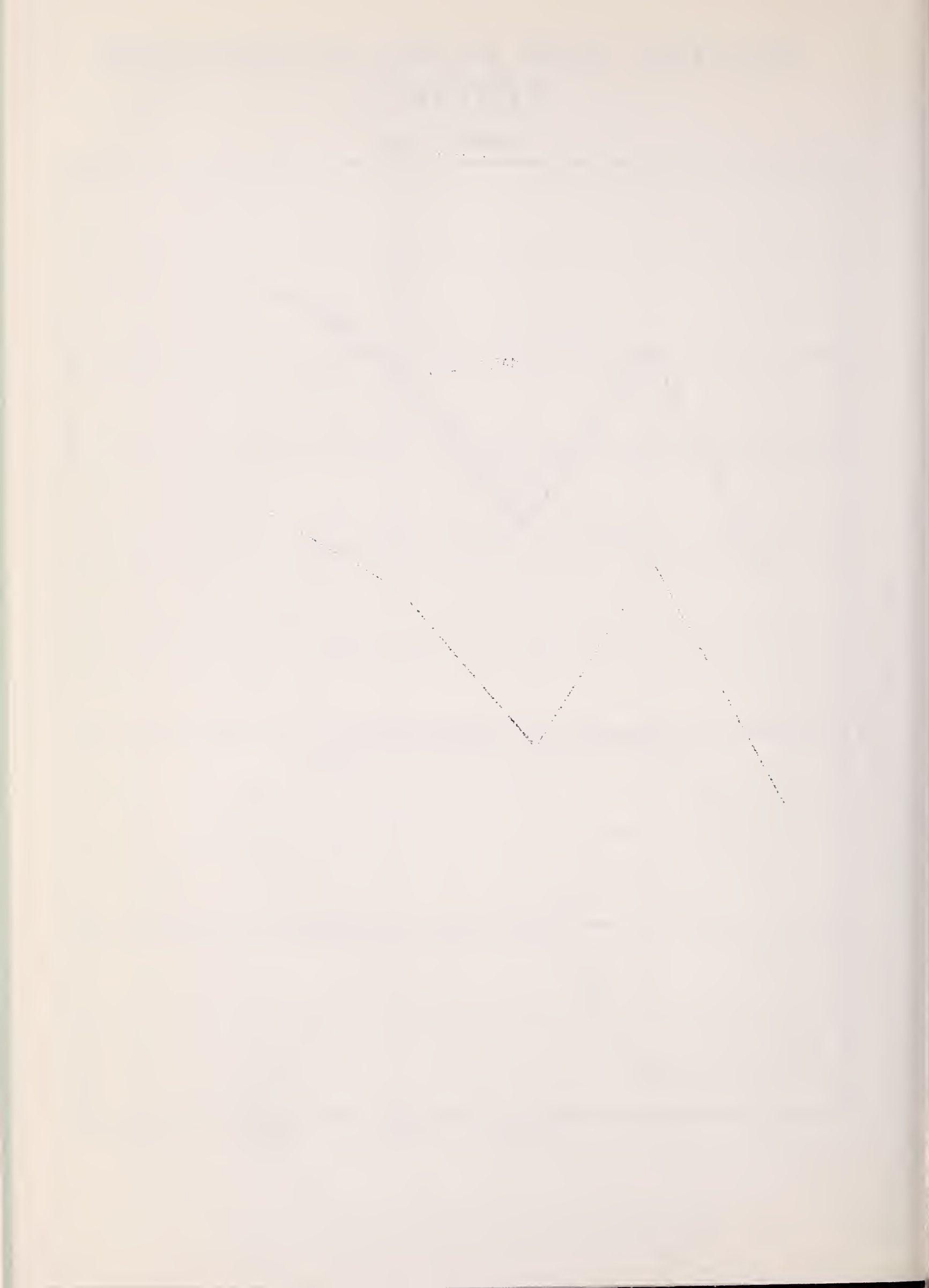
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RELATIVE SNOW WATER ACCUMULATION ARIZONA

MARCH 15, 1962

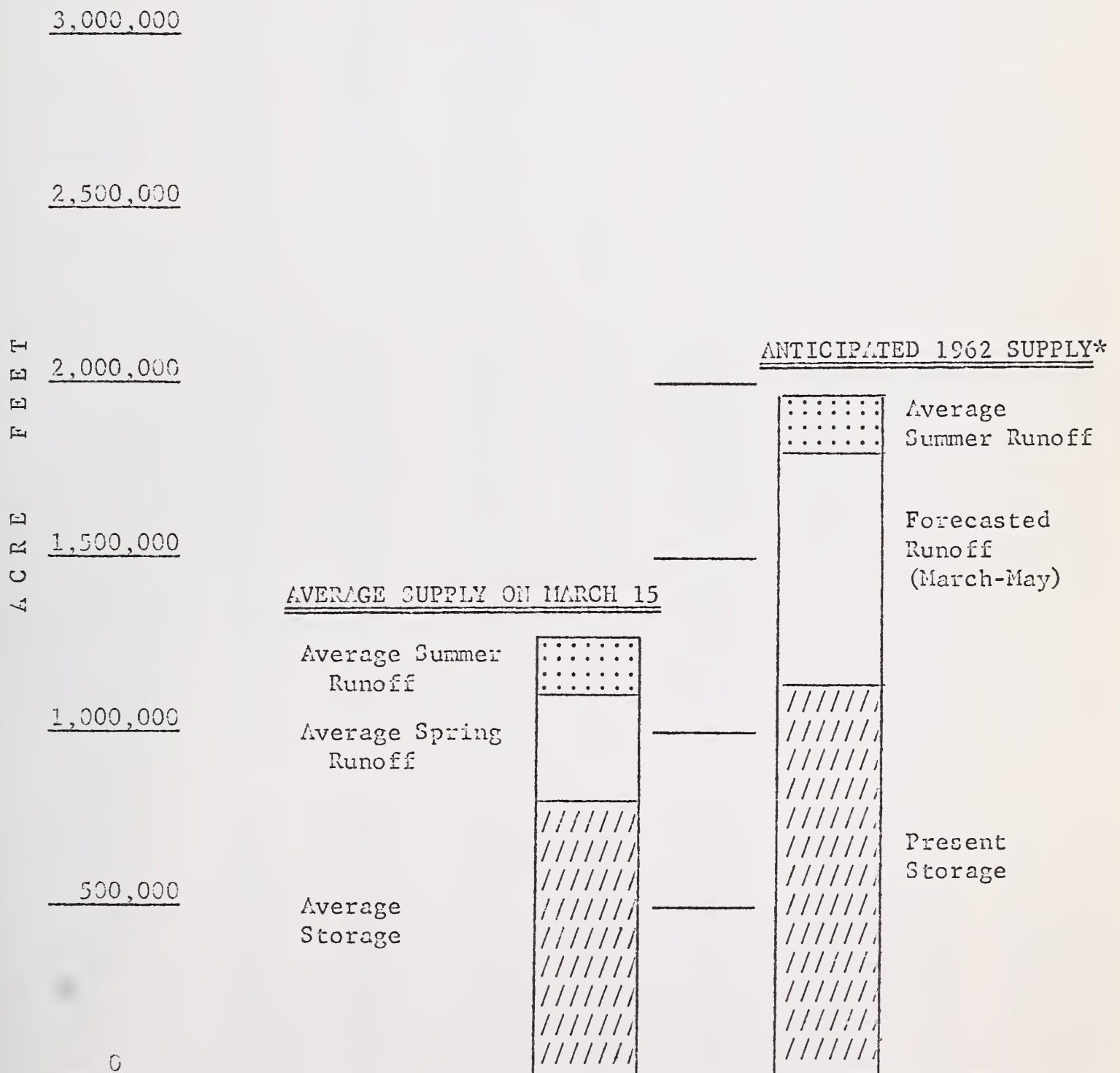


This graph represents the average snow water content on eleven selected snow courses on Arizona Sub-Watersheds.



WATER SUPPLY INVENTORY
SALT RIVER VALLEY SYSTEM

MARCH 15, 1962



* Based on present Storage + Forecasted Spring runoff + Average Summer runoff.



ARIZONA SNOW SURVEYS - ABOUT MARCH 15, 1962

SUB-WATERSHED and SNOW COURSE			SNOW COVER MEASUREMENTS					
			Date of Survey	1962		PAST RECORD		
				Snow Depth (In.)	Water Content (In.)	Water Content (Inches)		1943-57 Average
No.	Elev.					1961	1960	
<u>GILA RIVER</u>								
Redstone Trail	8S7	8600	3/13	31	11.2	5.4	---	---
Nutrioso	9S4	8500	3/15	14	2.8	0.6	0.7	1.2
Bear Wallow	10T1	8100	3/14	42	14.8	0.7	5.7	1.6 **
Frisco Divide	8S1-M	8000	3/14	12	2.7	0.6	1.5	1.2
Ice King	8S6	8000	3/13	35	11.8	4.1	---	---
State Line	9S8	8000	3/14	11	2.2	0.0	1.0	1.4
Coronado Trail	9S7	8000	3/15	11	3.4	0.4	1.3	1.9
Beaver Head	9S6	8000	3/14	20	6.4	1.2	3.2	1.9
Taylor Creek	7S1	7850	3/13	T	T	0.0	0.0	0.3
Inman	7S2	7800	3/13	T	T	0.0	0.0	0.3 **
Rose Canyon	10T2	7300	3/14	22	8.1	0.0	0.0	0.5 **
Mogollon	8S2	7000	3/13	11	3.2	1.4	2.8	1.2 **
<u>SALT RIVER</u>								
Ft. Apache *	9R5	9160	3/15	58	17.4	6.0	9.7	8.0 **
Baldy *	9S1	9125	3/15	55	17.3	6.6	10.8	7.1 **
Maverick Fork	9S2	9050	3/15	62	20.2	6.8	12.6	9.4 **
Nutrioso	9S4	8500	3/15	14	2.8	0.6	0.7	1.2
Coronado Trail	9S7	8000	3/15	11	3.4	0.4	1.3	1.9
Beaver Head	9S6	8000	3/14	20	6.4	1.2	3.2	1.9
Pacheta	9S5	7800	3/14	26	8.0	0.0	4.8	2.0 **
Gentry	10R5	7600	3/14	25	6.9	0.8	5.4	2.2 **
Heber	10R4	7600	3/14	28	7.4	1.1	6.3	2.4 **
Canyon Creek #2	10R7-M	7500	3/14	26	7.7	1.5	7.1	---
McNary	9R2-M	7200	3/16	16	5.7	0.0	2.4	1.3
Milk Ranch	9R1	7000	3/16	10	2.5	0.0	0.7	0.6
Workman Creek	10S1	6900	3/13	42	16.1	1.5	5.6	2.8 **
Forest Dale	10R6	6430	3/16	4	1.5	0.0	0.0	0.4
<u>VERDE RIVER</u>								
Snow Bowl	11P4	10260	3/12	57	17.1	3.9	---	---
Happy Jack	11R5	7630	3/14	30	8.7	0.8	T	2.8 **
Gaddes Canyon	12R4	7600	3/14	35	11.2	0.9	8.7	---
Mormon Mountain	11R3-M	7500	3/13	40	12.1	1.6	8.2	6.5 **
Mormon Lake *	11R4	7350	3/13	33	9.5	1.8	5.8	4.3 **
Fort Valley *	11P2	7350	3/14	20	7.1	0.0	2.5	1.9 **
Mingus Mountain	12R3	7100	3/14	5	1.4	0.0	0.0	0.7 **
Chalender	12P1-M	7100	3/14	22	6.7	T	3.9	2.7 **
Casner Park	11R2-M	6930	3/14	29	8.7	0.8	6.7	2.9 **
Munds Park	11R1-M	6500	3/12	16	4.4	0.0	3.4	2.2 **
Iron Springs *	12R2	6200	3/12	6	1.6	0.0	0.0	0.6 **
Camp Wood	12R1	5700	3/14	0	0.0	0.0	0.0	0.5 **

* On Adjacent Drainage

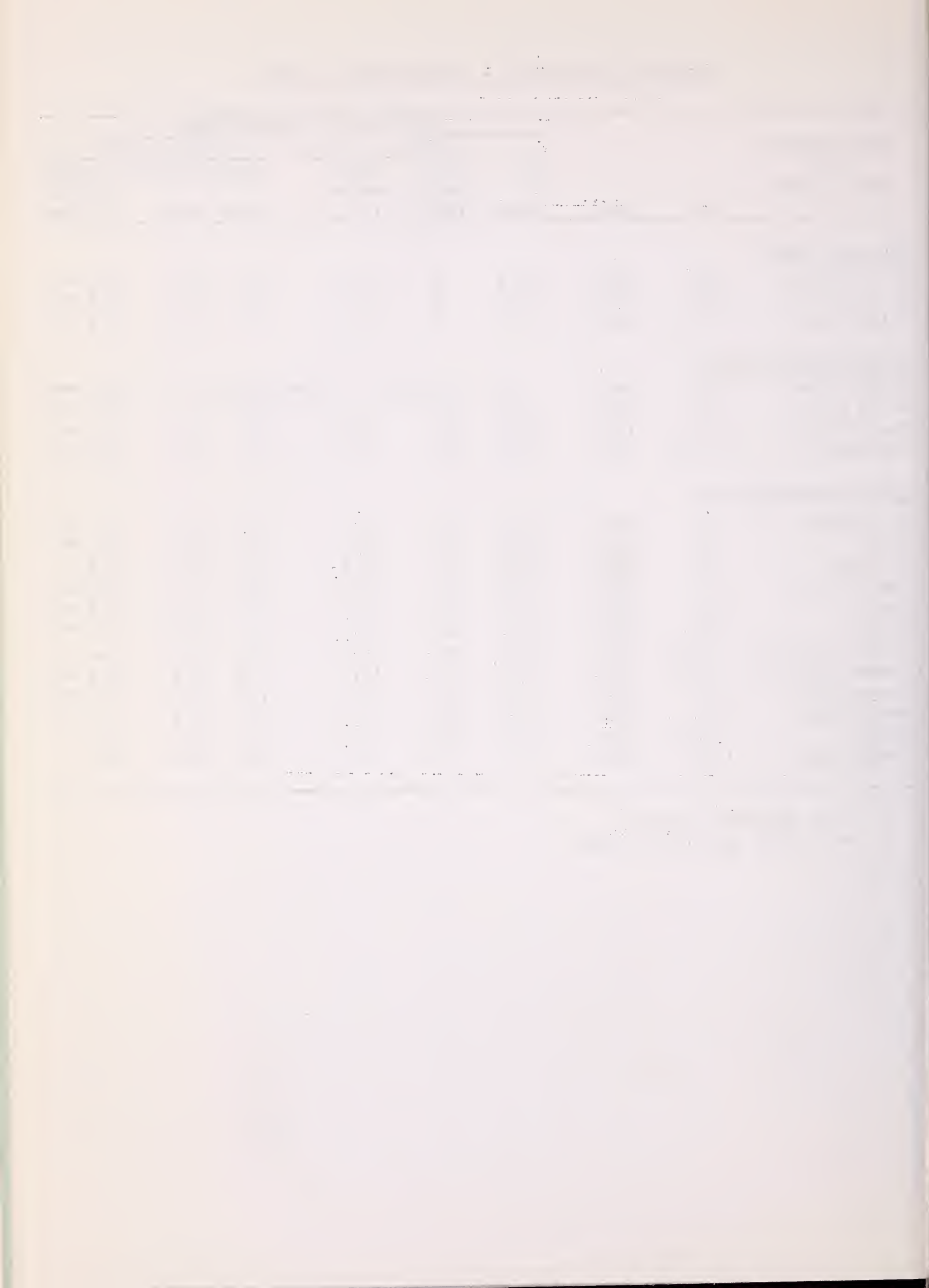
** 1943-57 Adjusted Average

ARIZONA SNOW SURVEYS - ABOUT MARCH 15, 1962

SUB-WATERSHED and SNOW COURSE			SNOW COVER MEASUREMENTS					
			1962			PAST RECORD		
			Date	Snow	Water	Water Content (Inches)		
			of	Depth	Content	1943-57		
No.	Elev.		Survey	(In.)	(In.)	1961	1960	Average
<u>WILLIAMS RIVER</u>								
Iron Springs	12R2	6200	3/12	6	1.6	0.0	0.0	0.6 **
Camp Wood *	12R1	5700	3/14	0	0.0	0.0	0.0	0.5 **
Willow Ranch	13P1	5000	3/15	T	T	0.0	0.0	0.1 **
<u>LOWER COLORADO RIVER</u>								
Bright Angel	12N1	8400	No	Survey		No	Survey ---	10.4 **
Grand Canyon	11P1	7500	3/14	12	4.0	0.0	1.6	1.6 **
Fort Valley	11P2	7350	3/14	20	7.1	0.0	2.5	1.9 **
Chalender *	12P1-M	7100	3/14	22	6.7	T	3.9	2.7 **
<u>LITTLE COLORADO RIVER</u>								
Ft. Apache	9R5	9160	3/15	58	17.4	6.0	9.7	8.0 **
Baldy	9S1	9125	3/15	55	17.3	6.6	10.8	7.1 **
Nutriosio	9S4	8500	3/15	14	2.8	0.6	0.7	1.2
Happy Jack *	11R5	7630	3/14	30	8.7	0.8	T	2.8 **
Gentry	10R5	7600	3/14	25	6.9	0.8	5.4	2.2 **
Heber	10R4	7600	3/14	28	7.4	1.1	6.3	2.4 **
Canyon Creek #2	10R7-M	7500	3/14	26	7.7	1.5	7.1	---
Mormon Mountain	11R3-M	7500	3/13	40	12.1	1.6	8.2	6.5 **
Mormon Lake	11R4	7350	3/13	33	9.5	1.8	5.8	4.3 **
Fort Valley	11P2	7350	3/14	20	7.1	0.0	2.5	1.9 **
McNary	9R2-M	7200	3/16	16	5.7	0.0	2.4	1.3
Forest Dale	10R6	6430	3/16	4	1.5	0.0	0.0	0.4

* On Adjacent Drainage

** 1943-57 Adjusted Average



PRECIPITATION AT SELECTED ARIZONA STATIONS **

STATION	Precipitation (Inches)			
	February - 1962		Current Water-Year (Oct.1961 - Feb.1962)	
	Total	Departure from long term mean	Total	Departure from long term mean
Ash Fork	2.17	+ .98	5.37	+ .62
Clifton	.03	- .87	8.88	+ 4.81
Douglas Smelter	.05	- .59	4.49	+ 1.38
Flagstaff WBAS *	4.15	+ 2.41	13.27	+ 7.64
Grand Canyon Hdq.	2.28	+ .70	6.38	+ .30
Parker	.55	- .14	2.02	- .38
Payson Ranger Station	3.33	+ 1.12	9.98	+ 1.25
Phoenix WBAS	.83	+ .04	3.08	- .15
Prescott WBAS	1.36	+ .03	4.42	- .68
Springerville	.46	- .09	7.85	+ 5.00
Tucson WBAS	.33	- .59	4.38	+ .66
Winslow WBAS	.58	+ .11	3.43	+ 1.08
Yuma WBAS	.05	- .24	2.04	+ .41

* WBAS = Weather Bureau Airport Station

** Data and Analysis furnished by Paul C. Kangeiser,
Arizona State Climatologist, U. S. Weather Bureau,
Phoenix, Arizona.



LIST OF SNOW SURVEYORS

<u>SNOW COURSE</u>	<u>SURVEYOR</u>
Baldy -----	SCS and SRVWUA
Bear Wallow -----	Forest Service - David Park
Beaver Head -----	N. A. Josh
Bright Angel -----	National Park Service
Camp Wood -----	Mrs. C. C. Merritt
Canyon Creek #2 ----	SCS and SRVWUA
Casner Park -----	SCS and SRVWUA
Chalender -----	Forest Service - MacIntyre
Coronado Trail -----	Forest Service - Bill Brainard & W. L. Sanders
Forest Dale -----	Fort Apache Reservation - Boyer and Endfield
Frisco Divide -----	Forest Service - Joe Clayton
Ft. Apache -----	SCS and SRVWUA
Fort Valley -----	Rocky Mountain Forest & Range Experiment Station
Gaddes Canyon -----	SCS - Bill Gray
Gentry -----	SCS and SRVWUA
Grand Canyon -----	National Park Service - Robt. Heyder
Happy Jack -----	Emil O. Ryberg
Heber -----	SCS and SRVWUA
Ice King -----	James R. Wray
Inman -----	C. H. McCauley
Iron Springs -----	Ernest Saxby
McNary -----	Fort Apache Reservation - Boyer and Endfield
Maverick Fork -----	SCS and SRVWUA
Milk Ranch -----	Fort Apache Reservation - Boyer and Endfield
Mingus Mountain ----	SCS - Bill Gray
Mogollon -----	James R. Wray
Mormon Lake -----	SCS and SRVWUA
Mormon Mountain ----	SCS and SRVWUA
Munds Park -----	SCS and SRVWUA
Nutrioso -----	Forest Service - Bill Brainard & W. L. Sanders
Pacheta -----	Foch Phillips
Redstone Trail -----	James R. Wray
Rose Canyon -----	Forest Service - David Park
Snow Bowl -----	Forest Service - Jay Shoemaker
State Line -----	Forest Service - Joe Clayton
Taylor Creek -----	C. H. McCauley
Willow Ranch -----	Tiny Miller
Workman Creek -----	Rocky Mountain Forest & Range Experiment Station



The Following Organizations Cooperate in the Arizona Snow Survey Work

FEDERAL

Department of Agriculture

Soil Conservation Service

Forest Service

Apache Forest

Coconino Forest

Coronado Forest

Gila Forest

Kaibab Forest

Prescott Forest

Rocky Mountain Forest and Range Experiment Station

Tonto Forest

Department of Commerce

Weather Bureau

Arizona Section

Department of Interior

Bureau of Reclamation

Region III

Geological Survey

Arizona District

Bureau of Indian Affairs

Fort Apache Reservation

San Carlos Irrigation Project

National Park Service

Grand Canyon National Park

Gila Water Commissioner

Safford, Arizona

STATE

Arizona Agricultural Experiment Station

IRRIGATION PROJECTS

Salt River Valley Water Users' Association

Phoenix, Arizona

San Carlos Irrigation and Drainage District

Coolidge, Arizona

PRIVATE

Southwest Lumber Mills, Inc.

McNary, Arizona

Other organizations and individuals furnish valuable information for the snow survey reports. Their cooperation is gratefully acknowledged.

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*"The Conservation of Water begins
with the Snow Survey"*